

## REMARKS

Claims 1 to 10 and 12-20 are under consideration. Claims 1, 2, and 7 have been amended. Claim 11 is cancelled. No new matter is added. Reconsideration of claims 1-10 and 12-20 is respectfully requested.

### Rejection Under 35 U.S.C. 102 (b)

The Action rejected claims 7,9,10 and 20 as being anticipated by U.S. Patent No. 5,358,858 to Meng et al. The Action states that:

- *Meng teaches a method of cultivating seaweeds in land based sea water ponds by producing spores and sporelings in cultures maintained in a laboratory facility (Meng Col 2 line 22);*
- *Growining the sporelings in a suspension culture under optimal growth conditions (meng Col. 2 line 25-26)*
- *Transferring the matured sporelings to large cultivation tanks to allow for rapid growth (meng Col. 2 line 39);*
- *Harvesting; drying; and grinding (Meng Col 2 line 4-6) to result in a product for human consumption or pharmaceutical use (Meng Col 1 line 13);*
- *Regarding claim 20, Meng teaches the seaweed product of Porphyra (Meng 1 line 31 and Col 4, line 66).*

In response, applicant disagrees with the rejection but applicant has amended claim 7 to decisively distinguish the present invention. The amended claim includes several elements, that are not present in Meng (as stated even in the Office Action on page 3, lines 13-20), for example, Claim 7 includes a step to allow for the rapid grow"-transferring the matured sporelings to a plurality of

large cultivation tanks containing aerated seawater,”. Meng et al does not describe or suggest: 1) “a plurality of tanks” (an important element in considering methods for production at small scale versus large scale) , and 2) “cultivation tanks containing aerated seawater for rapid growth” (an important factor if seaweed is to be grown in large scale quantities). Therefore, the rejection of claim 7 and claims 9,10 and 20 dependent on it must be withdrawn.

Based on these facts, it is clear that there is no basis for the above rejection, because in order for a reference to qualify as anticipatory, the reference must have each and every element of the invention being claimed. “*A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference*” Verdegaal Bros. v. Union Oil Co of California, 81 F2d 628, 631, 2 USPQ 1051, 1053 (Fed Cir 1987). Therefore, amended claim 7 and dependent claims 9,10 and 20 there from, should be allowed.

#### Rejections under 35 U.S.C. 103

The Action rejects Claims 1-6,8 and 11-19 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,358,858 to Meng et al in view of U.S. Patent No. 3,195,271 to Golueke et al. The Action states that *regarding*

*-Claim 1, Meng teaches a system for land based cultivation of seaweeds by phycological laboratory facilities suitable to produce spores and sporelings in cultures (Meng Col.3 line 6 and Col.4 line 65-66);*

*-a plurality of sleeve (Meng Col.2 line 31) housed in temperature and controlled land based facilities*

*to allow the maturation of the sporelings (Meng Col. 1 line 66-68);*

*-a plurality of small aerated inoculation tanks (Meng Col 2 line 34) enriched with defined nutrients under optimal conditions, to allow the mature sporelings to grow into seaweed pieces;*

*-and a plurality of large aerated cultivation tanks to transfer the seaweed pieces into to grow to full size (Meng Col 2 line 40).*

The Action further states that *Meng teaches the importance of aeration, but is silent on the use of seawater and aeration beginning at the culturing phase. The Action then continues to state that Golueke teaches that it is old and notoriously well-known to cultivate the seaweed in seawater that is aerated (Gouleke Col 1 line 67 and Fig. 1 #21) and it would have been obvious to modify the teachings of Meng with the teachings of Golueke at the time of the invention for a means of providing ideal artificial growth conditions by simulating some of the natural environmental conditions in which seaweed grows.*

In response, applicant disagrees. The cited section from Golueke- Col 1 line 67 is reproduced: "The raw sea water can be directly utilized, but it is preferred that it first be passed through a filter 10 in order to mechanically remove any contained detritus and so that it is reasonably clean and clear." FIG. 1., #21 indicates a carbondioxide source. In the specification, Col 2, line 61, Golueke describes that "While the alga can obtain its carbondioxide requirement from the atmosphere and from the breakdown of the sewage, it is sometimes desired to add carbon dioxide from a separate source 21." Therefore, as a matter of fact, the Action is incorrect in using the above cited sections of Golueke to reject claim 1. This is because the present invention does not use carbondioxide for aeration but air. See specification page 15, lines 14-16. There is no basis for the above rejection.

The Action further admits that *Meng is silent on the plurality of tanks, but adds that it*

*would have been obvious to modify teachings of Meng at the time of the invention by a mere duplication of an element for a multiple effect performing the same intended function. **The Action admits that the plurality of tanks enables mass production in a cost effective manner and enables one to control different environmental conditions, stages of development, and nutrients in various tanks.***

In response, applicant agrees with the rejection of claim 1. Applicant respectfully submits that the highlighted section above from the Office Action, describes how the present invention offers an advantage over Meng as modified by Golueke - i.e., the Action itself provides a secondary reason to overcome a 35 U.S.C 103(a) rejection under Graham v. John Deere, 383 U.S. 1, 148, USPQ 459 (1966): “secondary considerations as commercial success, long felt but unsolved needs failure of others, etc., might be utilized to give light to the circumstances under which the invention to be patented was developed.” Applicant has achieved commercial success and is on the verge of developing his invention on a large industrial scale and provide a ready supply of high quality seaweeds for human use. Applicant requests that these secondary reasons be considered to overcome all of the rejections under 103(a). Accordingly claim 1 should be allowed.

The Action states, *regarding Claim 2 that Meng as modified teaches a land based technology comprising a seeding unit producing spores (Meng Col 3 line 6); sporeling production unit (Meng Col 3 line 11); maturation unit (Meng Col 3 line 16); cultivation unit (Meng Col 3, line 20); harvesting; drying; and grinding (Meng Col 2 line 4-6).*

In response, applicant disagrees, but in the interest of seeking allowance of Claim 2, applicant has amended claim 2 to distinguish that the present invention includes aerated seawater enriched with nutrients including suitable amounts of

ammonium chloride and sodium phosphate. Therefore, there is no basis to sustain the above rejection over modified Meng for these reasons, as well as reasons presented above for claim 1.

The Action States:

*Regarding Claim 3, Meng as modified teaches the seaweed species grown in land based seawater ponds is Porphyra (Meng Col 1, line 31).*

*Regarding Claim 4, Meng as modified teaches the nutrients added to the seawater are designed to produce a plurality of seaweeds that are used as nutraceuticals, food components, pharmaceuticals or cosmetics (Meng Col 1, line 13).*

*Regarding Claim 5, Meng as modified teaches production of spores in petri dishes (Meng Col.3 line 6); cultivation of sporelings in sleeves under environmentally controlled conditions (Meng Col 3 line 16); growth in small and large tanks (Meng Col 3 line 20 and Col 2 line 34-41). Meng is silent on separating the inoculation and harvesting into separate ponds.*

*Regarding Claim 6, Meng as modified is inherently programmable for production throughout the year since Meng teaches controlling the light and the temperature conditions for the cultivating seaweed.*

*Regarding Claim 8, Meng as modified teaches the large cultivation tank contains suitable nutrients to ensure high yields of seaweed products (Golueke Col 2 line 34).*

In response, applicant disagrees that the above descriptions form proper basis for rejections of claims 3-8, under 35 U.S.S. 103(a). First, applicant refers to the reasons presented for claim 1 to overcome the combination of Meng and Golueke ("modified Meng"). Second, because of the differences in the systems and conditions for the mass production of Porphyra between the present invention and Meng, the product Porphyra and its uses are different as a matter of fact in the

present invention.

Applicant refers to MPEP 2141.02 and specifically points out that in determining the differences between the prior art and the claims, the question under 35 USC 103, is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Stratoflex, Inc. v. Aeroquip Corp. 713 F. 2d 1530 218 USPQ 871 (Fed. Cir. 1983). Moreover, the prior art reference must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure. In re Vaeck 947 F. 2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (MPEP §2143). The Federal Circuit, in reference to references cited in an obviousness rejection, has held that: "The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention." Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 1986 MPEP 2141.

As to claim 8, Golueke, specifically states that in addition to the added salts, micro elements and nutrients, it is essential to add sewage. See Col 2, lines 34-37. In contrast, the present invention does not require sewage.

Thus as a matter of fact and law, there is no basis to sustain the above rejection of claims 3 to 8 and this rejection should be withdrawn.

The Action states:

*Regarding Claim 11, 13 and 17, Meng as modified is silent on the small aerated inoculation tanks have the volume capacity of about 40 liters, and the large aerated cultivation tanks have the volume capacity of about 4000 liters; varying sizes including 30- 500 m<sup>2</sup> or the volume capacity of each of the sleeves is about 20 liters, of the tanks used in stage 1, is about 40 liters, of the large tanks used in stage 2 is about 4000 liters, of inoculation ponds in stage 3 is about 30 m<sup>2</sup> and the cultivation*

*ponds used in stage 4 ponds of 500 m<sup>2</sup>. It would have been obvious to one of ordinary skill in the art to modify the teachings of at the time of the invention through routine tests and experimentation for efficient and optimized production ....land base.*

*Regarding claim 12, Meng as modified teaches the importance of nutrients (Golueke Col 2, line 34) and N:P nutrients are notoriously well known fertilizers, but Meng is silent on seawater being enriched with 0.5 mM NH<sub>4</sub>Cl and 0.05 mM Na<sub>2</sub>PO<sub>4</sub>, at least two times a week for at last three weeks. It would have been obvious.... Developmental stage.*

*Regarding claim 14, Meng as modified teaches the drying unit comprises centrifugation drums or low temperature ovens (Meng Col 2 line 49).*

*Regarding claim 15, Meng as modified teaches the seaweed species grown in land based seawater ponds include Porphyra (Meng 1 line 31)*

*Regarding claim 16, Meng inherently teaches the land based temperature controlled facility housing the plurality of sleeves, further comprises a chiller to regulate the temperature ((Meng Col 4 line 68 and Col 3 line 12).*

*Regarding claims 18 and 19, Meng as modified teaches the seaweed product of Porphyra (Meng Col 1 line 31 and Col 4 line 66)*

In response, Applicant disagrees with the above rejections because they are untenable as a matter of patent law. As discussed above, when applying 35 USC 103, the following tenets of patent law must be adhered to: (A) The claimed invention must be considered as a whole; (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination, (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention, and (D) Reasonable expectation of success is the standard with which obviousness is

determined. Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 1986 MPEP 2141.

None of the factors A to D above, are present here. Moreover, applicant has submitted reasons in the section on Claim 1, to overcome the “modified Meng” argument. Therefore, as a matter of fact and law, the above rejection of claims 12-19 should be withdrawn.

Applicant respectfully submits another reason to overcome all of the above obviousness rejections. Under Graham v. John Deere, 383 U.S. 1, 148, USPQ 459 (1966): “secondary considerations as commercial success, long felt but unsolved needs failure of others, etc., might be utilized to give light to the circumstances under which the invention to be patented was developed.” Contrary to statements made in the Office Action, of routine laboratory tests and experimentation required to develop and operate the invention, Applicant’s experience has not been that. In actual fact, the present invention requires a combination of diverse technologies- engineering, architecture, botany, physiological facilities, etc., in order to develop and operate the present invention. Applicant has achieved commercial success and is on the verge of developing his invention on a large industrial scale and provide a ready supply of high quality seaweeds for human use. Applicant requests that these secondary reasons be considered to overcome all of the rejections under 103(a) that are based on application of impermissible hindsight. Claim 11 has been cancelled. Accordingly claims 12 to 19 should be allowed.

The following prior art was made of record but not relied upon- U.S. Patent



No 5,958,761. Therefore this reference is not discussed in detail.

Applicant has made diligent effort to amend the claims and respond to various rejections made in the Office Action. If for any reasons however, the Examiner should deem that this application is not in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney listed below to resolve any outstanding issues prior to issuing a further Office Action.

Date: November 18, 2004

Respectfully submitted,



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